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Gail Wuellner Monsanto Company 800 N. Lindbergh Blvd. Mail Zone E2NA St. Louis, MO 63167			STRZELECKA, TERESA E	
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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/404,520  
Filing Date: September 23, 1999  
Appellant(s): CAO ET AL.

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Thomas E. Holsten  
David R. Marsh

For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed August 24, 2004.

**(1) *Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is correct.

**(4) *Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) *Summary of Invention***

The summary of invention contained in the brief is correct.

**(6) *Issues***

The appellant's statement of the issues in the brief is substantially correct. The changes are as follows: parts a) and b) are moot in view of the withdrawal of the relevant rejections; in part c), Applicants bring out an issue of patentability of claims 58-72 under 35 U.S.C. 101 for allegedly containing non-patentable subject matter. This rejection was never made for claims in question.

**(7) *Grouping of Claims***

The appellant's statement in the brief that certain claims do not stand or fall together is not agreed with because Appellant does not provide reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

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**(8) *Claims Appealed***

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(9) *Prior Art of Record***

Rodriguez-Tome, P. et al. "The European Bioinformatics Institute (EBI) databases" Nucleic Acids Research, vol. 24, No. 1 (January 1, 1996), pp. 6-12.

**(10) *Grounds of Rejection***

The following ground(s) of rejection are applicable to the appealed claims:

The rejection of claims 58-72 under 35 U.S.C. §101 Utility is withdrawn.

The rejection of claims 58-72 under 35 U.S.C. §112, first paragraph, enablement, is withdrawn.

The following is used as a basis for the rejection of claims 58-72 under 35 USC § 103(a).

**MPEP 2106. IV.B.1(b)**

**(b) Nonfunctional Descriptive Material**

Descriptive material that cannot exhibit any functional interrelationship with the way in which computing processes are performed does not constitute a statutory process, machine, manufacture or composition of matter and should be rejected under 35 U.S.C.101. Thus, Office personnel should consider the claimed invention as a whole to determine whether the necessary functional interrelationship is provided. Where certain types of descriptive material, such as music, literature, art, photographs and mere arrangements or compilations of facts or data, are merely stored so as to be read or outputted by a computer without creating any functional interrelationship, either as part of the stored data or as part of the computing processes performed by the computer, then such descriptive material alone does not impart functionality either to the data as so structured, or to the computer. Such "descriptive material" is not a process, machine, manufacture or composition of matter. (Data consists of facts, which become information when they are seen in context and convey meaning to people. Computers process data without any understanding of what that data represents. Computer Dictionary 210 (Microsoft Press, 2d ed. 1994).) The policy that precludes the patenting of nonfunctional descriptive material would be easily frustrated if the same descriptive material could be patented when claimed as an article of manufacture. For example, music is commonly sold to consumers in the format of a compact disc. In such cases, the known compact disc acts as nothing more than a carrier for nonfunctional descriptive material. The purely nonfunctional descriptive

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material cannot alone provide the practical application for the manufacture.

## **MPEP 2106.VI Patentable Subject Matter — Computer-Related Inventions**

If the difference between the prior art and the claimed invention is limited to descriptive material stored on or employed by a machine, Office personnel must determine whether the descriptive material is functional descriptive material or nonfunctional descriptive material, as described supra in paragraphs IV.B.1(a) and IV. B.1(b). Functional descriptive material is a limitation in the claim and must be considered and addressed in assessing patentability under 35 U.S.C. 103. Thus, a rejection of the claim as a whole under 35 U.S.C. 103 is inappropriate unless the functional descriptive material would have been suggested by the prior art. In re Dembiczak, 175 F.3d 994, 1000, 50 USPQ2d 1614, 1618 (Fed. Cir. 1999). Nonfunctional descriptive material cannot render nonobvious an invention that would have otherwise been obvious. Cf. In re Gulack, 703 F.2d 1381, 1385, 217 USPQ 401, 404 (Fed. Cir. 1983) (when descriptive material is not functionally related to the substrate, the descriptive material will not distinguish the invention from the prior art in terms of patentability).

Common situations involving nonfunctional descriptive material are:

- a computer-readable storage medium that differs from the prior art solely with respect to nonfunctional descriptive material, such as music or a literary work, encoded on the medium,
- a computer that differs from the prior art solely with respect to nonfunctional descriptive material that cannot alter how the machine functions (i.e., the descriptive material does not reconfigure the computer), or
- a process that differs from the prior art only with respect to nonfunctional descriptive material that cannot alter how the process steps are to be performed to achieve the utility of the invention.

Sequences stored on a computer readable medium are therefore considered as non-functional descriptive material.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 58-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rodriguez-Tome et al. (Nucl. Acids Res., vol. 24, pp. 6-12, 1996; cited in the previous office action).

Regarding claims 58-72, Rodriguez-Tome et al. teach CD-ROM with containing EMBL nucleotide sequence database (page 6, second paragraph). Rodriguez-Tome et al. teach that the CD-ROM also contains software for data query and retrieval (page 9, the last paragraph; page 10, first paragraph). Rodriguez-Tome et al. teach comparing users' sequences (= target sequences) to sequence in the EMBL nucleotide sequence database (page 10, paragraph 8).

It would have been *prima facie* to obvious for one of ordinary skill in the art to have used a computer system comprising a CD-ROM of Rodriguez-Tome et al. to perform sequence searches against a collection of sequence data. The motivation to do so would have been that using CD-ROM made database searches accessible to clients without Internet access.

**(11) Response to Argument**

**8(B) and 8(C)** Appellant's arguments are moot in view of the withdrawal of the rejections of claims 58-72 under 35 U.S.C. §101 Utility and under 35 U.S.C. §112, first paragraph, enablement.

**8(D)** Appellant's arguments with respect to a rejection of claims 58-72 under 35 U.S.C. §101 as encompassing non-functional descriptive material are moot, since no such rejection was made in the final office action mailed March 24, 2004.

**8(E)**

**Issue**

Are claims 58-72 obvious under 35 U.S.C. 103 (a) over Rodriguez-Tome et al., taking into account the fact that the sole difference between Rodriguez-Tome et al. and Appellant's claims

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are nucleic acid sequence data for sequences with SEQ ID NO: 16207-27905, which are considered as non-functional descriptive material?

In the arguments presented in section 8(E) Appellant does not discuss the basis of the rejection, which was the fact that nucleotide sequences recorded on a computer-readable medium were considered to represent a non-functional subject matter, thus representing data which does not differ from any other data, such as European Bioinformatics Institute nucleic acid sequences on CD-ROM, taught by Rodriguez-Tome et al. In terms of data processing, it does not matter to the computer whether it processes sequences with SEQ ID NO: 16207-27905 or sequences from the EMBL database. Further, Rodriguez-Tome et al. teach comparison of user's sequences against data from the EMBL database of nucleic acid sequences (page 10, 8<sup>th</sup> paragraph), suggesting the limitations of claims 58-72.

Comparing a first nucleic acid sequence (a non-functional descriptive material) to a database of nucleic acid sequences (a non-functional descriptive material) results in a set of nucleic acid sequences selected by the process, which also constitute non-functional descriptive material. Further, the set of sequences selected by a computer as a result of sequence comparison algorithm do not differ from the database of sequences, since they are mostly parts of the sequences already present in the original database. Therefore, the process returns a result which is a subset of the original non-functional descriptive material.

The U.S. Court of Appeals Federal Circuit issued opinions in the following cases related to the subject matter of non-functional descriptive material and its relationship to its substrate: *In re Gulack* (217 USPQ 401, 3/30/1983), *In re Lowry* (32 USPQ2d 1031, 8/26/1994) and *In re Ngai*

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(70 USPQ2D 1862, CA FC 2004). The main conclusion reached by the Court in *Gulack* was that (page 404, II. B.):

“...What is required is the existence of *differences* between the appealed claims and the prior art sufficient to establish patentability. The bare presence or absence of a specific functional relationship, without further analysis, is not dispositive of obviousness. Rather, the critical question is whether there exists any new and unobvious functional relationship between the printed matter and the substrate.”

Considering this opinion, there is no evidence that nucleic acid sequence data claimed by Appellant, which constitute the sole difference from the prior art, introduce a new and unobvious functional relationship between the data and the process which uses them and the computer system which performs the process. It is exactly the same algorithm (for example, BLAST), which will compare an unknown sequence to Appellant’s database of sequences with SEQ ID NO: 16207-27905 or compare an unknown sequence to a database of EMBL sequences. In either case the computer will perform the same steps prescribed by the algorithm that it executes, and using the database of Appellant’s sequences does not require an introduction of specific algorithm processing steps or hardware, thus no special functional relationship is established between Appellant’s data and the process which uses them.

*In re Ngai* considered a relationship between a kit for RNA amplification comprising a portion of a reagent selected from primers, enzymes, nucleotides and buffer together with the instructions to a prior art which taught a kit comprising instructions and a buffer. In this case the Court ruled that (page 1864, fourth paragraph):



“...Here, the printed matter in no way depends on the kit, and the kit does not depend on the printed matter. All that the printed matter does is teach a new use for an existing product. As the *Gulack* court pointed out, “[w]here the printed matter is not functionally related to the substrate, the printed matter will not distinguish the invention from the prior art in terms in terms of patentability.”

Again, in this case the court confirmed that the mere presence of a printed matter, i.e., a non-functional descriptive material, does not provide a basis for patentability. At this point Appellant might object that the database of sequence cannot be considered as “printed matter”. However, as can be seen *In re Lowry*, not all of the data which are processed by a computer require a computer and can be therefore classified as printed matter. In the *Lowry* case, the issue was whether the data structures of Lowry differed from printed matter and thus whether they were unobvious over prior art. The Court made the following statement (page 1034, Discussion, fourth paragraph):

“The printed matter cases "dealt with claims defining as the invention certain novel arrangements of printed lines or characters, useful and intelligible only to the human mind." *In re Bernhart*, 417 F.2d 1395, 1399, **163 USPQ 611, 615** (CCPA 1969). The printed matter cases have no factual relevance where "the invention as defined by the claims *requires* that the information be processed not by the mind but by a machine, the computer." *Id.*

(emphasis in original). Lowry's data structures, which according to Lowry greatly facilitate data management by data processing systems, are processed by a machine. Indeed, they are not accessible other than through sophisticated software systems. The printed matter cases have no factual relevance here.

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Nor are the data structures analogous to printed matter. Lowry's ADOs do not represent merely underlying data in a database. ADOs contain both information used by application programs and information regarding their physical interrelationships within a memory.

Lowry's claims dictate how application programs manage information. Thus, Lowry's claims define functional characteristics of the memory.”

Therefore, as can be seen from the above description of data structures, for data to be considered different from “printed matter” requires that they are be processed by computer only and that they create functional relationship with the processing software and the physical memory in which they are stored. None of these requirements is fulfilled by Appellant’s nucleic acid sequence data. First, they are easily accessible to human mind in a form of a sequence printed on a piece of paper. Secondly, they do not require processing by a machine: a sequence comparison between two sequences can be performed, however inefficiently, without the use of a computer. Finally, as pointed out above, Appellant’s data do not introduce a special functional relationship to the processing algorithm or a medium on which they are stored. Therefore, for purposes of comparison with the prior art and case law, Appellant’s data is non-functional descriptive material.

#### Conclusion

Appellant’s nucleic acid sequence data, which comprise sequences with SEQ ID NO: 16207-27905 are classified as non-functional descriptive material, and as such, do not represent an unobvious contribution over the prior art reference of Rodriguez-Tome et al., as indicated by the case law discussed above.

For the above reasons, it is believed that the rejections should be sustained.

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Respectfully submitted,  
Teresa Strzelecka  
Examiner  
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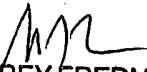
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